

# **Teacher Enrichment Adventure in Watershed Education and Training**

**TEAWET**

**Dr. Vishna Herrity**

**Executive Director**

**Gevirtz Research Center**

**University of California Santa Barbara**

# TEAWET

## Professional Development Goals for Watershed Education



- ☺ Increase teacher knowledge
- ☺ Provide hands-on, inquiry based experiences
- ☺ Integrate instruction across the curriculum
- ☺ Equip teachers with instructional resources
- ☺ Increase implementation of watershed education in the classroom and in the field

# Participants

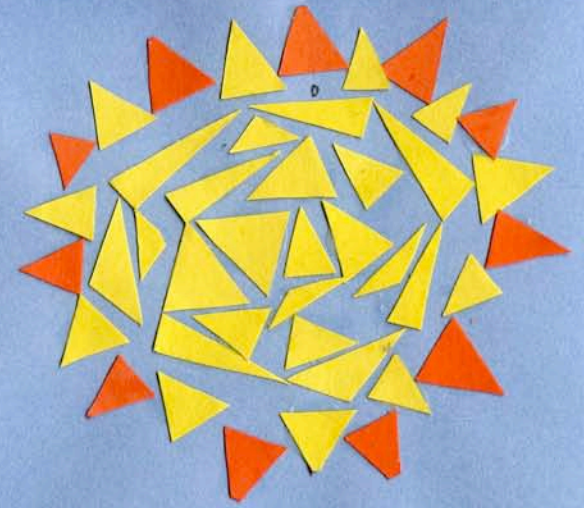
- ☺ Recruited 20 teachers-Santa Barbara/Ventura Counties
- ☺ Grade levels 5-8
- ☺ Interdisciplinary subjects
- ☺ 75% with 4 or more years of experience
- ☺ 38% Science Teachers & 62% Multiple-Subjects Teachers



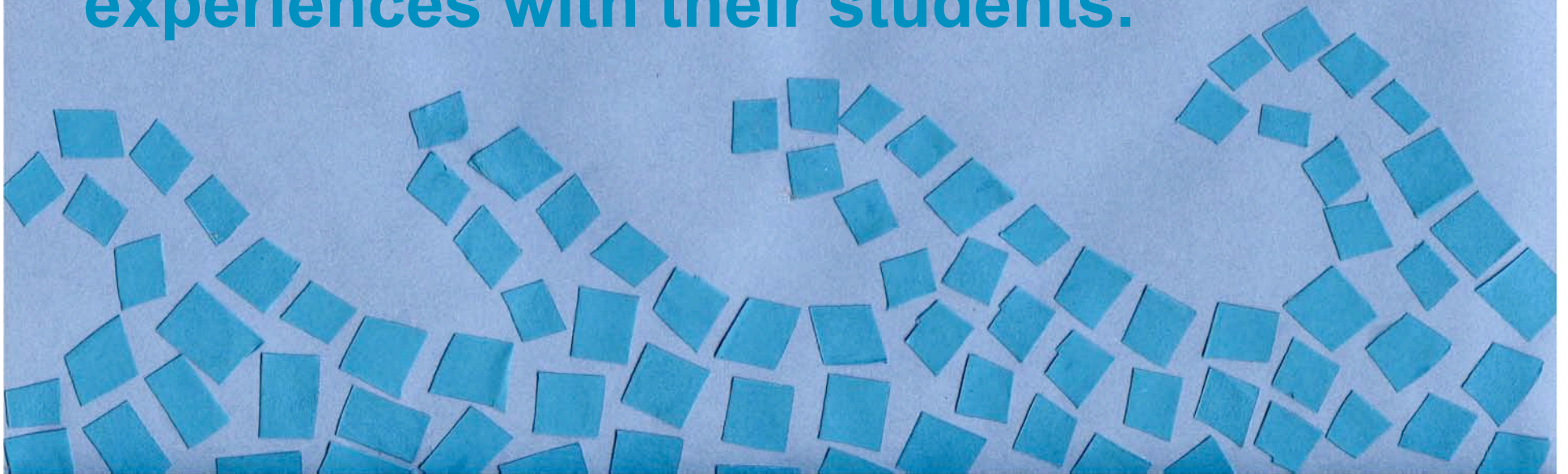
# TEAWET Professional Development

- ☺ Nine Friday/Saturday all-day sessions (63 hours) in 2006~2007
- ☺ Sessions facilitated by scientists, educators and other professionals
- ☺ UCSB Extension Course with 8 continuing education units available
- ☺ Stipends were provided for participation and materials.
- ☺ Blog address [www.teawet.blogspot.com](http://www.teawet.blogspot.com)

# Overview of TEAWET Sessions



Through these sessions,  
teachers have gained knowledge  
about watersheds and increased  
experiences with their students.



# SESSION 1

UC Santa Barbara

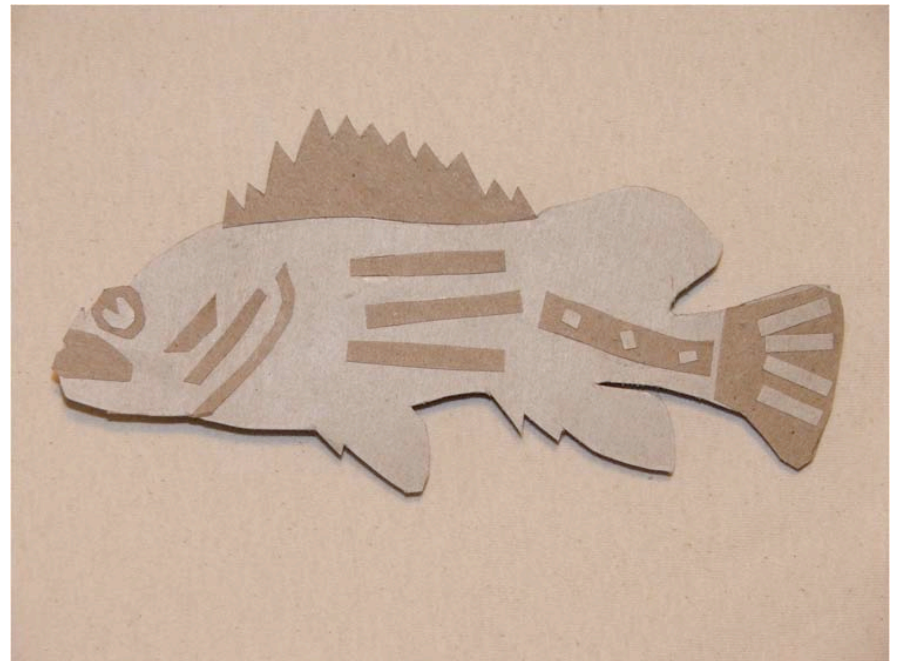
Integration of  
watershed  
education and  
scientific inquiry into  
the curriculum



## SESSION 2

### Santa Barbara Botanic Garden & Lake Casitas

Exploration of  
riparian habitats  
along a creek and  
the plants and  
animals of Lake  
Casitas



Exposing the  
next generation







© 2007 Europe Technologies  
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Google

Pointer: 34°23'06.76" N 119°20'16.07" W elev: 522 ft

Streaming: 100%

Eye alt: 13846 ft





## SESSION 3

### Watershed Resource Center at Arroyo Burro Beach

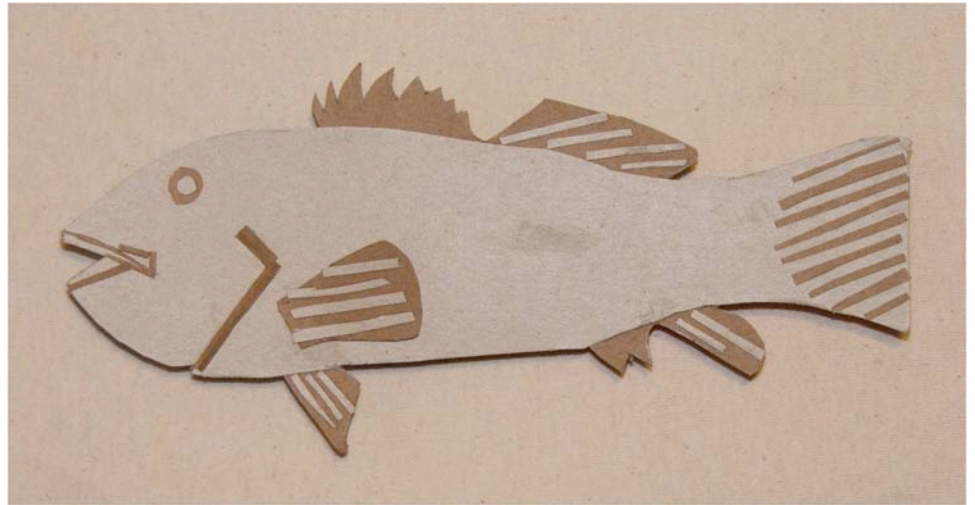
Exploration of the  
physical features of  
the watershed and  
human influences



## SESSION 4

### Ty Warner Sea Center at Stearns Wharf

Recognizing the  
connection between  
the watershed and  
the ocean and the  
impact on The  
Channel Island  
National Marine  
Sanctuary





# SESSION 5

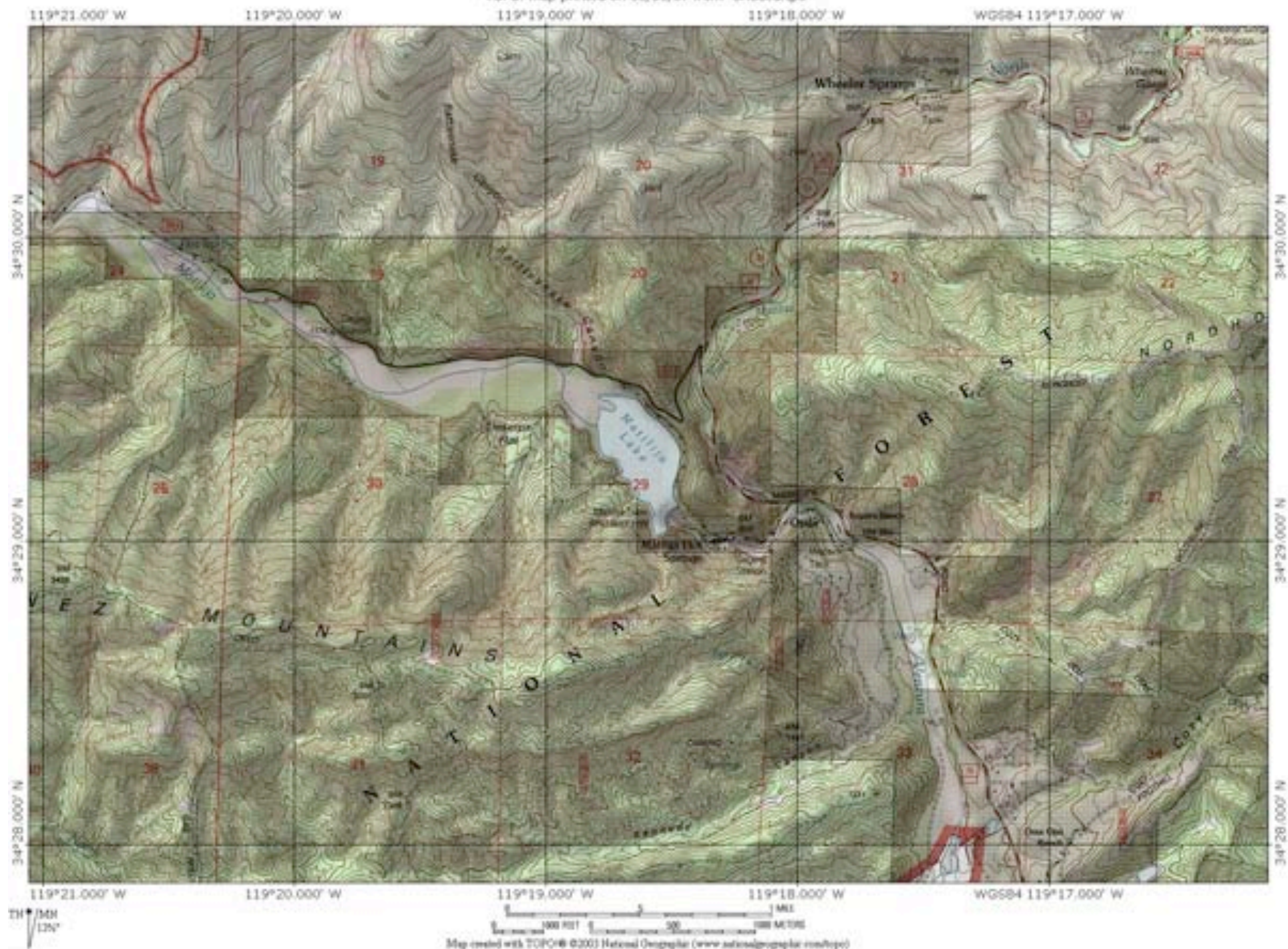
## Ventura Government Center and Matilija Dam

Discovering the  
effects of human  
developments on  
the watershed





TOPOI map printed on 03/30/07 from "Untitled.tpo"



# SESSION 6

## Arroyo Hondo Preserve

The investigation of  
the biological  
features of an  
undisturbed  
watershed







# SESSION 7

UC Santa Barbara  
Marine Science  
Institute

Expansion of the  
inquiry process and  
scientific  
investigation.  
Examination of kelp  
and the kelp forest



## SESSION 8

### Shearwater Vessel to Santa Cruz Island

Exploration of the  
unique aspects of  
our local marine  
environment and  
increasing ocean  
literacy knowledge





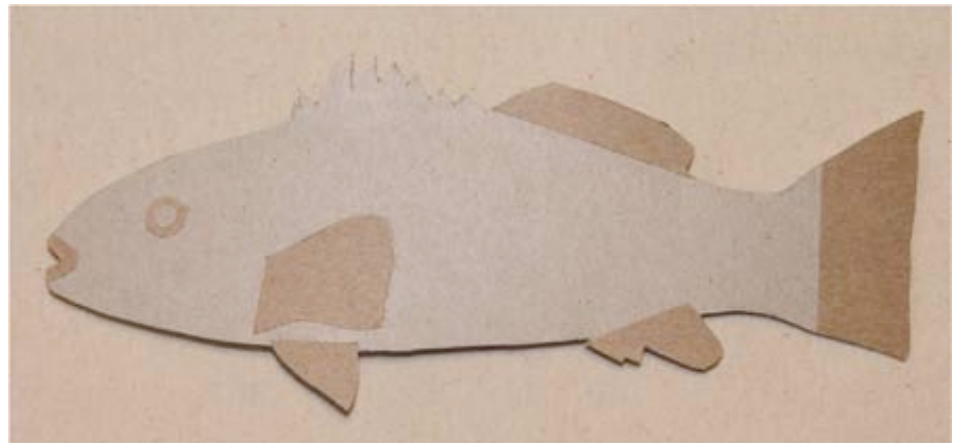




# FINAL SESSION 9

UC Santa Barbara  
Gevirtz Research  
Center

Teacher  
presentations of  
watershed lessons





**Kristen A. Lewis**

**Teacher at El Camino Middle School, Lompoc  
Founder of Student Environmental Research  
Foundation ~ SERF**



# Collecting life from the pond

*High Security  
Access on  
Vandenberg Air  
Force Base*



# What is the story of our school's water?

Leo Treviño

Teacher

El Camino Middle School

Lompoc





**Where does it come from?**

**How much do  
we need it?**

**And where does it go?**

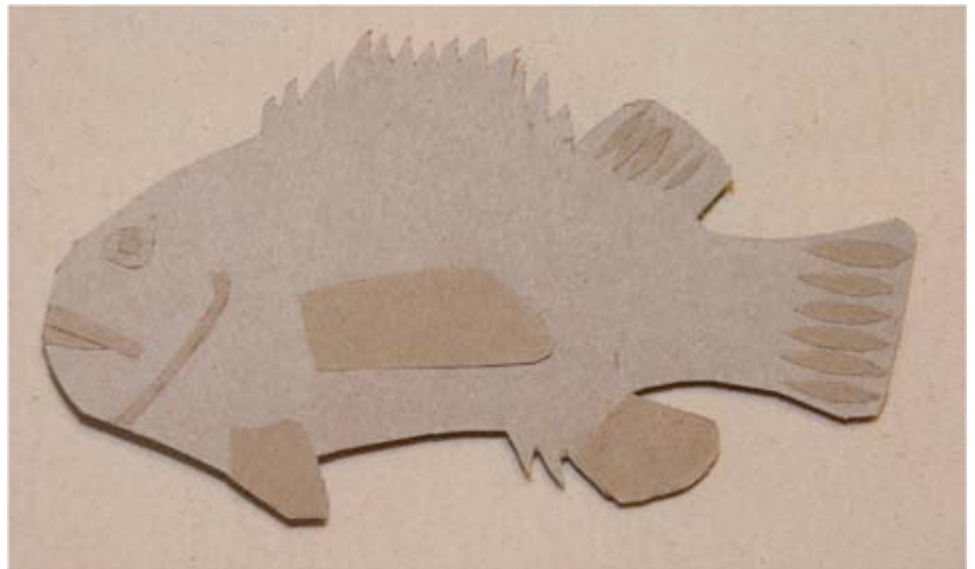
# Community Stewards

“...to build a better world.”

*YEA Coal Oil Point, habitat restoration*

This year...

TEAWET continues  
to provide new  
opportunities to  
explore watersheds  
and learn about  
water resources





# TEAWET EVALUATION



# Evaluation Methods

- 😊 Quantitative & Qualitative Methods
- 😊 Triangulation of Findings
- 😊 Data Collection:
  - Online Pre- and Post-Survey
  - Focus Group Interviews
  - Observation Field Notes of TEAWET Trainings
  - Teacher Logs
  - Presentation of watershed lessons and student work

## Results: Knowledge of Watershed Education

- ☺ Some teachers learned about watershed education for the first time through participation in TEAWET
- ☺ Teacher Comment:  
“When we started, I did not even know what a watershed was, period.”

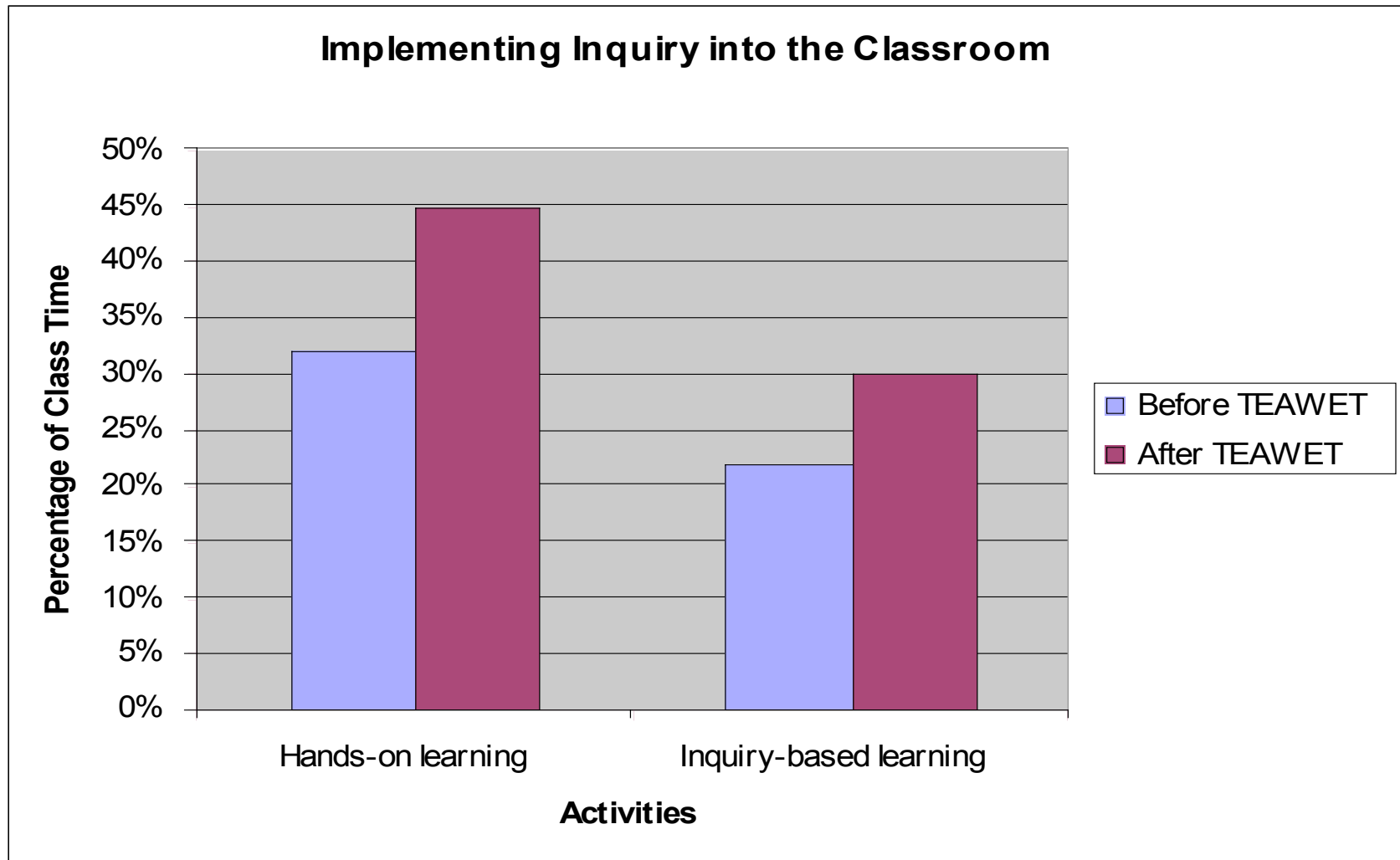
# Results: Knowledge of Watershed Education

- 😊 Teachers with prior experience in watershed education deepened their knowledge and developed a greater depth of understanding about watersheds.
- 😊 Teacher Comments:
  - “I like the connection you made for us with the watershed education resources.”
  - “It was helpful the way you presented the information so that we could use it in the classroom easily.”

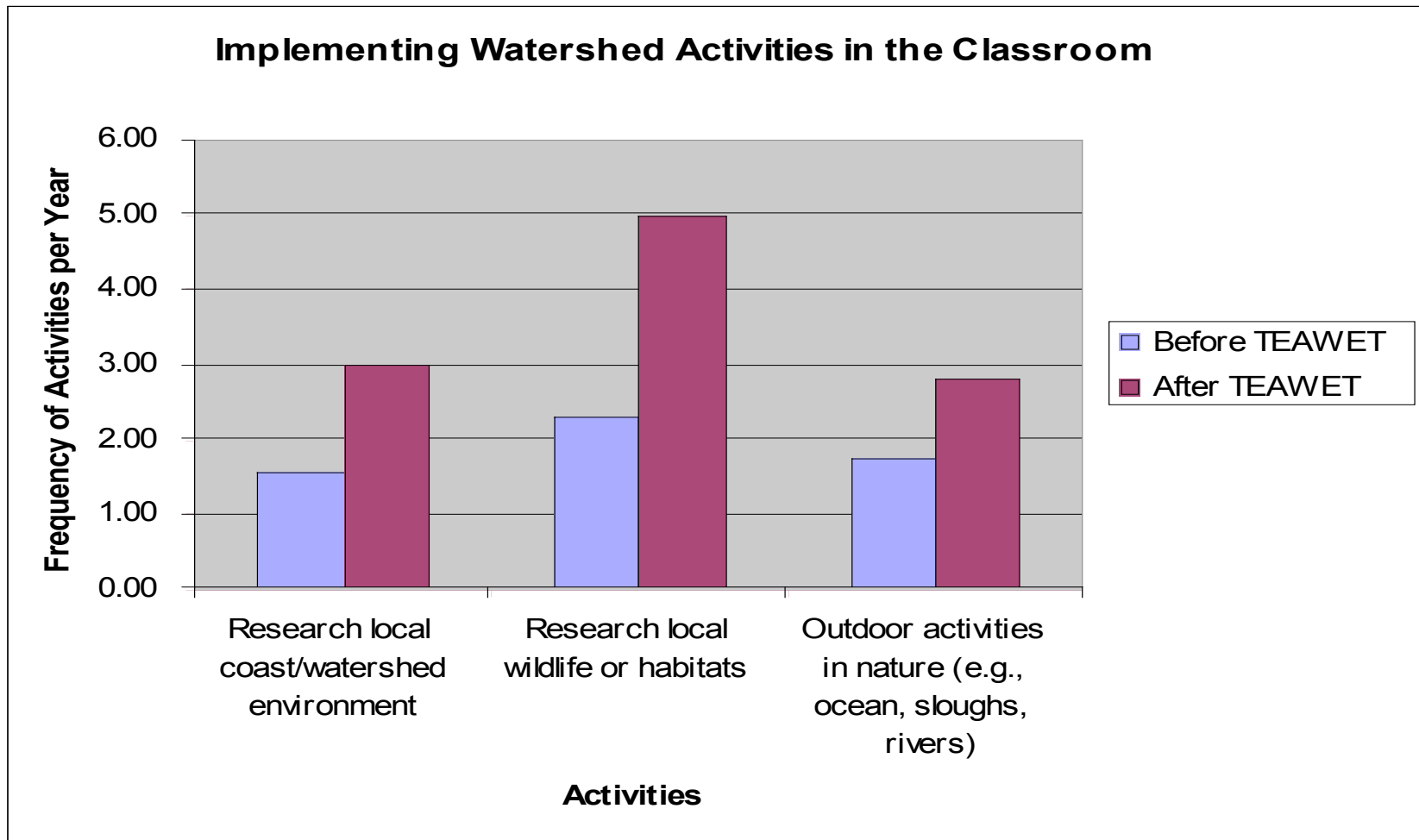
# Results: Knowledge of Watershed Education

- ☺ Teachers became more comfortable and confident in integrating watershed education into their existing curriculum and finding connections to state content standards in science and other subject areas.
- ☺ Teacher Comments:
  - “Being in this program helped me use those lessons and connect them better in math and language arts.”
  - “I felt successful integrating watershed into the classroom.”

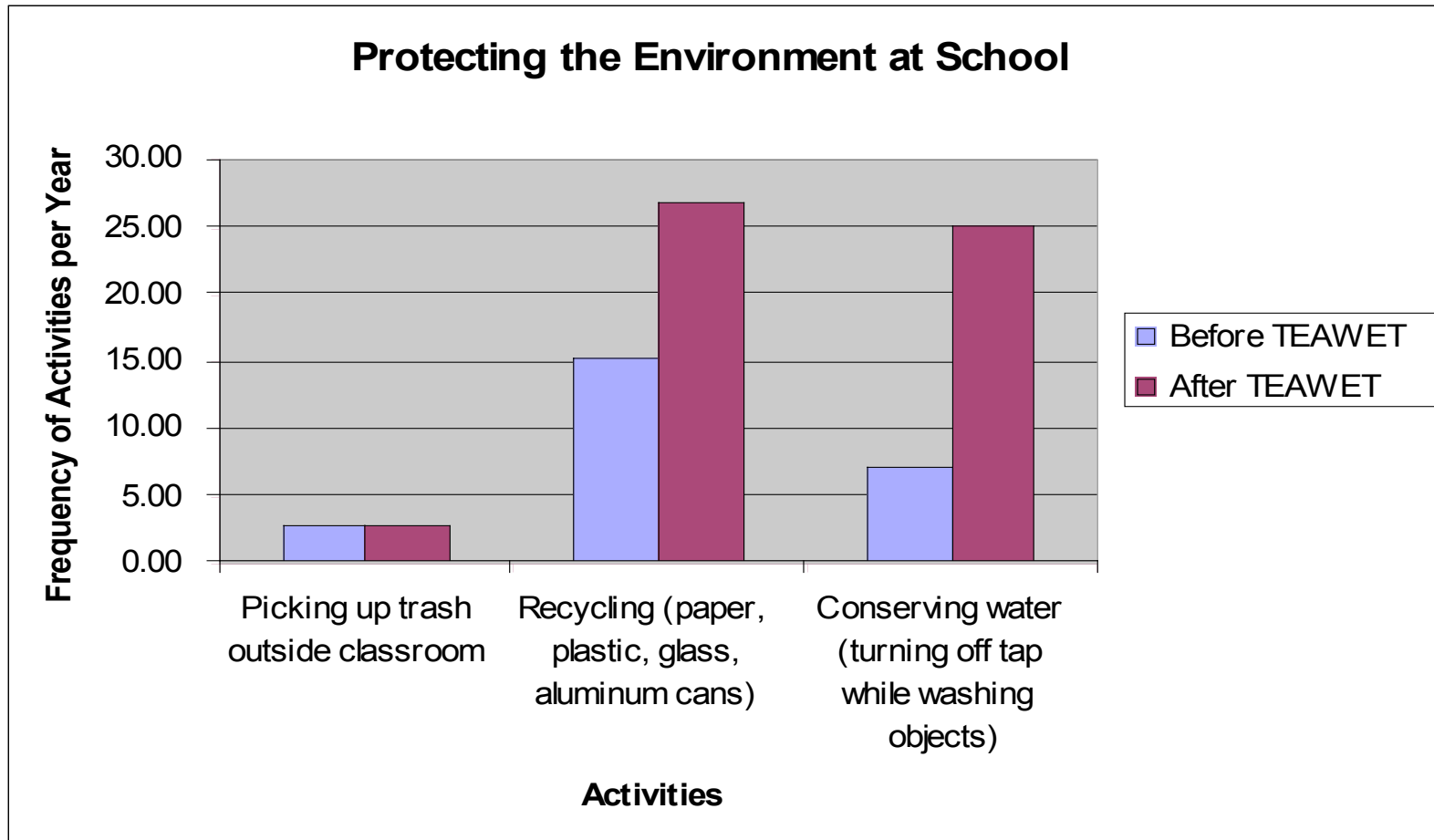
# Results: Application of Inquiry-Based Learning



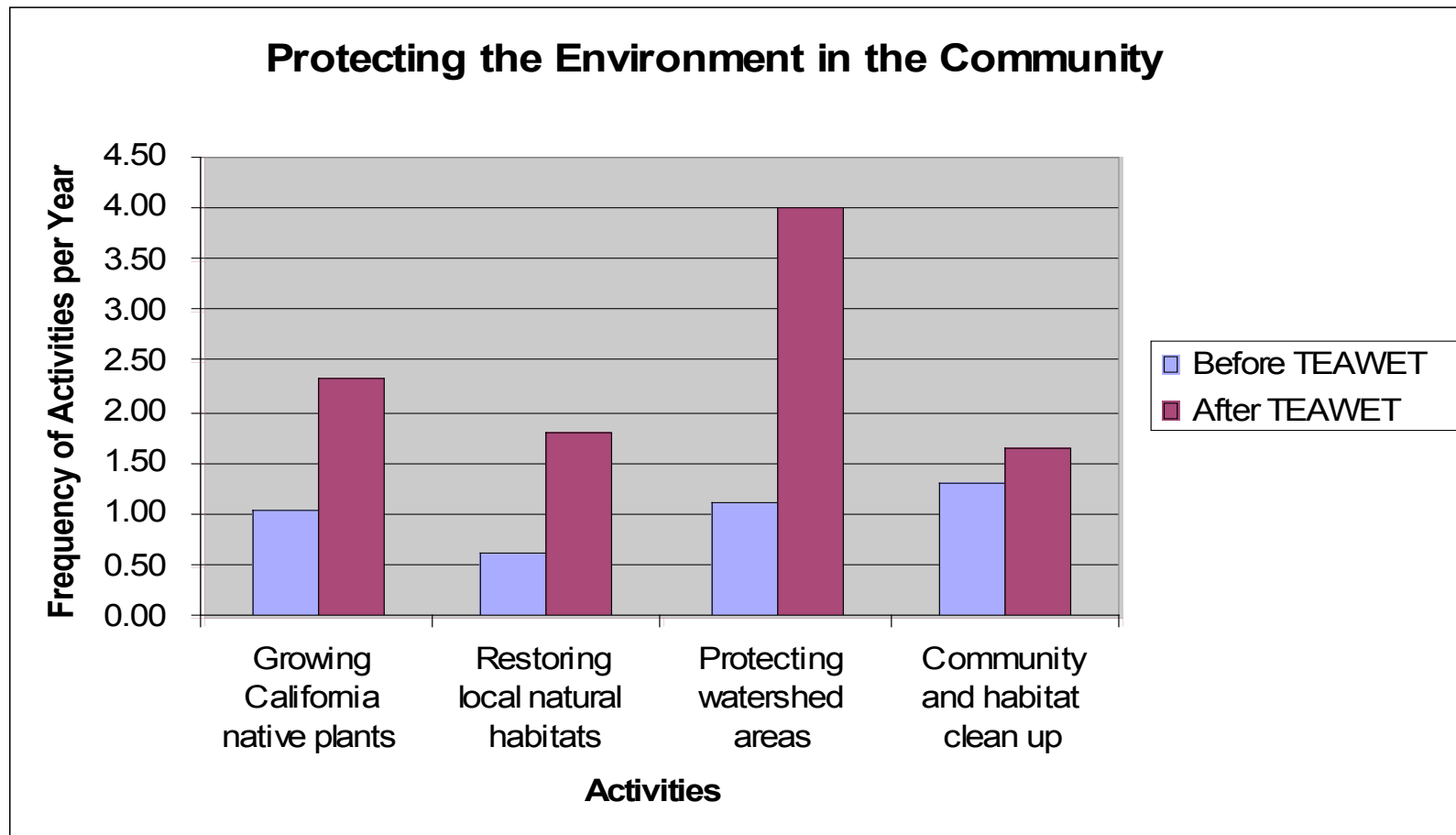
# Implementation of Watershed Activities in the Classroom



# Environmental Protection Activities at School



# Environmental Protection Activities in the Community



**Final thoughts...**

**What does it take to have a  
successful watershed education  
program?**



# Collaboration



“Working together”

*Goleta Beautiful, Isla Vista tree planting*

# Exploring the Watershed



“From top...”

*Goleta Water Treatment Plant*

# Learning as a Team



“...to bottom”

*Goleta Slough habitat restoration*

# Getting Lost Deep in the Forest



“Searching for clues about the ecosystem”

*Arroyo Hondo Nature Preserve*

# Exploring the Channel Islands



“Experiencing the wonders of nature...”

*Exploration of Santa Cruz Island*

# Exploring the Marine Sanctuary



“Experiencing the ocean environment...”

*Exploration of the Channel Islands National Marine Sanctuary*

# Promoting inquiry within...

“Learning concepts at a deeper level”

*Santa Barbara kelp restoration*

...the classroom

“Making  
connections  
between the  
classroom  
and the  
outside  
world

*Santa Barbara Channelkeepers sea urchin*

# Get Out and Inquire!

“Explore the watershed from the bottom...”

*SCI streambed – an all-girl adventure*

# Encounter the Watershed

“...to the top.”

*SCI waterhole, girl with GPS*

# Guide the Young



“...to explore natural habitats.”

*Santa Ynez River Watershed*

# Establish Research Teams



“Cooperating to make learning fun”

*Coal Oil Point, kelp bugs*

# Inspire Future Scientists



“Making sense of what’s out there...”

*YEA UCSB MSI, sand crab analysis*

**But most importantly...**





**Our students  
need to  
experience  
water**



**First hand!**

